city based on vegetable market wastes in Maharashtra and two units each of 25 cubic meter per day capacity biogas plants based on fruit and vegetable wastes in Karnataka have been undertaken.

A 10 MW capacity rice straw-based pilot project has been set up in Punjab at an estimated cost of Rs. 25 crores. It has generated 36.63 lakh Kwbr of power during trial runs up to January, 1994. A distillery effluent-based 100 cubic meter capacity pilot biogas plant has been undertaken in Uttar Pradesh at a total cost of about Rs. 60 lakhs. Two small hydro pilot projects based on pump as turbine have been undertaken in Jubbal and Manali in Himachal Pradesh. At Kakroi in Haryana 3 units of small hydro pilot projects on bulb turbine, ultra low head turbine and pump as turbine concepts have been undertaken. Total estimated cost of these small hydro power project was Rs. 2.07 crores. These projects are designed to provide 13 lakh Kwhr per year of electricity.

(d) to (f) The cost camparison of non-conventional energy power vis-a-vis new conventional power projects is given at Statement. *(See below)*

Technologies for power generation from Wind, canal, based Small Hyhro, Biomass Cogeneration are already cost competitive in comparison with new conventional power projects. Further development efforts are underway *to* improve performance & to achieve cost reduction in respect of other potential technologies through the involvement of R&D establishments & industry.

S. No.	Programme	Capital cost (Rs. Cr./MW)	Generation cost (Rs. Kwhr)
1	2	3	4
1.	Wind Power	3.5	2.25
2.	Small Hydro	3.5—6.0	1.50—3.50
3.	Co-Generation	2.0—2.5	2.00—2.50

Costs compare favourably with new conventional power projects shich are estimated at Rs. 4.00 crores/MW and Rs.2.25/Kwhr respectively.

मध्य प्रदेश में बायोगैस तथा धुआं रहित चूल्हा संयंत्र

4986. **श्री दिलीप सिंह भूरिया** : क्या ग्रामीण विकास मंत्री यह बताने की कृपा करेंगे कि :

(क) क्या मध्य प्रदेश के ग्रामीण क्षेत्रों में धुआं रहित बायोगैस चूल्हा संयंत्र लगाये गये हैं;

(ख) यदि हां, तो तत्संबंधी ब्यौरा क्या है;

(ग) क्या सरकार 1993-94 तथा 1994-95 के दौरान राज्य के और अधिक जिलों में बायोगैस तथा धुआं रहित चूल्हा संयंत्र लगाने का विचार रखती है; और

(घ) उक्त अवधि में इस प्रयोजनार्थ गुजरात राज्य के लिए सरकार ने कितनी धनराशि आवंटित की है ?

गैर-पारंपरिक ऊर्जा स्रोत मंत्रालय में राज्य मंत्री (श्री एस. कृष्ण कुमार) : (क) जी हां।

(ख) मध्य प्रदेश राज्य में फरवरी, 1994 तक कुल 13.39 लाख धुआं रहित चूल्हे, 68,780 परिवार आकार के बायोगैस संयंत्र और 91 सामुदायिक/संस्थागत बायोगैस संयंत्र स्थापित किए जा चुके हैं।

(ग) बायोगैस और धुआं रहित चूल्हों की केन्द्रीय योजनाएं राज्य के सभी जिलों में कार्यान्वित की जा रही है । वर्ष 1993-94 के लिए प्रगति और वर्ष 1994-95 के लिए योजना निम्न प्रकार है :—

कार्यक्रम	लक्ष्य 1993–94	1993–94 के दौरान उपलब्धि (फरवरी, 94 तक)	लक्ष्य 1994–95 (अस्थायी)
परिवार आकार के बायोगैस संयंत्र	12500	14562	15000
सामुदायिक/संस्थागत बायोगैस संयंत्र	15	8	10
धुंआं रहित चूल्हे	2 लाख	1.94 लाख	3 लाख

(घ) वर्ष 1993–94 के दौरान बायोगैस और धूआं रहित चूल्हा कार्यक्रमों के कार्यान्वय के लिए गुजरात सरकार को 15.52 करोड़ रुपय की राशि जारी की गई थी। (राशियां राज्यों को आवंटित वास्तविक लक्ष्यों के अनुसार जारी की जाती है) । चालू वर्ष 1994–95 में अब तक कोई राशियां जारी नहीं की गई है ।

Solar Energy in Kutch-Saurashtra Region

4987. SHRI CHIMANBHAI HARIBHAI SHUKLA : Will the PRIME MINISTER be pleased to state :

(a) whether Government propose to enhance production capacity of electricity from solar energy in Kutch-Saurashtra region;

(b) if so, whether any survey has been conducted in this regard; and

(c) if so, the details thereof ?

THE MINISTER OF STATE IN THE MINISTRY OF NON CONVENTIONAL ENERGY SOURCES (SHRI S. KRISHNA KUMAR) : (a) to (c) Solar energy can be used for producing electricity through thermal or solar photovoltaic routes. Aninitial proposed was received from the Gujarat Energy Development Agency (GEDA) for setting up a 30 MW solar thermal power project near Bhuj in Kutch district of Gujarat. Generation, of power through the solar thermal route is a new technology which is site specific, capital intensive and depends upon various other techno-economic factors. The request of GEDA was exmained alongwith other proposals and was not found favourable for the first R&D project. However, use of solar photovoltaic technology for decentralised electricity applications such as lighting, community facilities, water pumping etc. has already been initiated in Kutch and other parts of Saurashtra region of the State.

Solar Thermal Systems Purchased and its Functioning

4988. SHRI PRAMOD MAHAJAN :
SHRI VIREN J. SHAH :

Will the PRIME MINISTER be pleased to state :

(a) how many solar thermal systems have been purchased and installed so far State-wise and at what cost;